

Claims

1. A thin film material comprising a substrate;

an underlying layer in which a large number of recesses of an extremely small size are demonstrated uniformly in an substrate; and

a preset film of a regular structure derived from said recesses demonstrated in said underlying layer; said preset film being formed on said underlying layer.

2. The thin film material according to claim 1 wherein said underlying layer is composed of silicon oxide and a mixture thereof, and includes a large number of voids evenly formed to a preset cubic structure, and wherein said underlying layer is surface-processed so that a large number of recesses of extremely small sizes are uniformly demonstrated in a surface thereof on which said preset film of the regular structure is formed.

3. The thin film material according to claim 2 wherein said underlying layer is a layer which is composed of silicon oxide and a mixture thereof and in which a large number of spherically shaped voids of the same size, with the diameter of the voids being several nm to tens of nm, are uniformly formed to a face-centered cubic structure.

4. A recording medium comprising a substrate;

an underlying layer in which a large number of recesses of an extremely small size are uniformly demonstrated, said underlying layer being formed on said substrate; and

a magnetic film or a non-magnetic film formed on the surface of said underlying layer in which said recesses of the extremely small size are demonstrated.

5. The recording medium according to claim 4 wherein said magnetic film or the non-magnetic film is layered on the recesses demonstrated in said underlying layer to form protuberances which are discrete with respect to one another.

6. The recording medium according to claim 4 wherein said magnetic film or the non-magnetic film is layered on the entire surface of said underlying layer.

7. The recording medium according to claim 4 wherein said underlying layer is a layer which is formed of silicon oxide and a mixture thereof and in which a large number of voids are formed uniformly to a preset cubic structure, and wherein the surface of said underlying layer on which said magnetic layer or the non-magnetic layer is deposited has been processed so that the recesses are demonstrated uniformly.

8. The recording medium according to claim 7 wherein said underlying layer is a layer which is formed of silicon oxide and a mixture thereof and in which a large number of spherically-shaped voids of the same size, with the diameter of several nm to tens of nm, are formed uniformly to a face-centered cubic structure.

9. A recording medium comprising a substrate;

an underlying layer in which a large number of recesses of an extremely small size are uniformly demonstrated, said underlying layer being formed on said

substrate;

a first magnetic film or a first non-magnetic film formed on the surface of said underlying layer in which said recesses of an extremely small size are demonstrated; and

a second magnetic film or a second non-magnetic film formed on said first magnetic film or said first non-magnetic film; said second magnetic film or the second non-magnetic film being of properties different from those of said first magnetic film or said first non-magnetic film.

10. The recording medium according to claim 9 wherein

said first magnetic film or said first non-magnetic film is layered on said recesses demonstrated in said underlying layer to form protuberances which are discrete with respect to one another, and wherein

said second magnetic film or the second non-magnetic film is formed in said discrete protuberances, formed by said first magnetic film or said first non-magnetic film which is formed on said underlying layer.

11. The recording medium according to claim 9 wherein

said first magnetic film or the first non-magnetic film is layered on the entire surface of said underlying layer, and wherein

said second magnetic film or the second non-magnetic film is formed on said first magnetic film or said first non-magnetic film.

12. The recording medium according to claim 9 wherein said underlying layer is

composed of silicon oxide and a mixture thereof, and includes a large number of voids evenly formed to a preset cubic structure, and wherein the surface of said underlying layer on which is formed said first magnetic film or the first non-magnetic film is processed so that a large number of recesses of an extremely small size are demonstrated in said surface.

13. The recording medium according to claim 12 wherein said underlying layer is a layer which is formed of silicon oxide and a mixture thereof and in which a large number of spherically-shaped voids of the same size, with the diameter of several nm to tens of nm, are formed uniformly to a face-centered cubic structure.